

PTO/SB/08A (10-01)

Approved for use through 10/31/2002.OMB 0651-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1996, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitution for form 1448A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>			Complete If Known		
			Application Number	09/853,233	
			Filing Date	May 11, 2001	
			First Named Inventor	Steven T. Harshfield	
			Art Unit	2823	
			Examiner Name	William D. Coleman	
Sheet	1	of	10	Attorney Docket Number	M4065.0743/P743

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Document Number Number-Kind Code ¹ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	AA	2002/0000686	1/3/2002	Kozicki et al.	
	AB	2002/0168820 App.	11/2002	Kozicki	
	AC	2000/0072188 App	6/2002	Gilton	
	AD	2002/0123169 App	9/2002	Moore et al.	
	AE	2002/0123248 App.	9/2002	Moore et al.	
	AF	3,622,319	11/1971	Sharp	
	AG	3,743,847	7/1973	Boland	
	AH	4,269,935	5/1981	Masters et al.	
	AI	4,312,938	1/1982	Drexler, et al.	
	AJ	4,316,946	1/1982	Masters, et al.	
	AK	4,320,191	3/1982	Yoshikawa et al.	
	AL	4,405,710	9/1983	Balasubramanyam et al.	
	AM	4,419,421	12/1983	Wichelhaus, et al.	
	AN	4,795,657	1/1989	Formigoni et al.	
	AO	4,847,674	7/1989	Silwa et al.	
	AP	4,499,557	2/1985	Holmberg et al.	
	AQ	5,177,567	1/1993	Kiersy et al.	
	AR	5,219,788	6/1993	Abemathey et al.	
	AS	5,238,862	8/1993	Blalock et al.	
	AT	5,315,131	5/1994	Kishimoto et al.	
	AU	5,350,484	9/1994	Gardner et al.	
	AV	5,360,981	11/1994	Owen et al.	
	AW	5,500,532	3/19/1996	Kozicki et al.	
	AX	5,512,328	4/1996	Yoshimura et al.	
	AY	5,512,773	4/1996	Wolf et al.	
	AZ	5,726,083	3/1998	Takaishi	
	AA1	5,751,012	5/12/1998	Wolstenholme et al.	
	AB1	5,761,115	6/1998	Kozicki et al.	
	AC1	5,789,277	8/1998	Zahorik et al.	
	AD1	5,841,150	11/1998	Gonzalez et al.	
	AE1	5,846,889	12/1998	Harbison et al.	
	AF1	5,896,312	4/20/1999	Kozicki et al.	
	AG1	5,914,893	6/22/1999	Kozicki et al.	
	AH1	5,920,788	7/1999	Reinberg	
	AI1	5,998,066	12/1999	Block et al.	
	AJ1	6,077,729	6/2000	Harshfield	
	AK1	6,084,796	7/4/2000	Kozicki et al.	
	AL1	6,117,720	9/2000	Harshfield	
	AM1	6,143,604	11/2000	Chiang et al.	
	AN1	6,177,338	1/2001	Ljau et al.	
	AO1	6,236,059	5/2001	Wolstenholme et al.	
	AP1	6,297,170	10/2001	Gabriel et al.	
	AQ1	6,300,684	10/2001	Gonzalez et al.	
	AR1	6,316,784	11/2001	Zahorik et al.	

1548236 v1; XSMJ011.DOC

PTO/SB/06A (10-01)

Approved for use through 10/31/2002.OMB 0851-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO				Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	09/853,233
				Filing Date	May 11, 2001
				First Named Inventor	Steven T. Harshfield
				Art Unit	2823
				Examiner Name	William D. Coleman
Sheet	2	of	10	Attorney Docket Number	M4065.0743/P743

AS1	6,329,606	12/2001	Freyman et al.		
AT1	6,348,365	2/19/2002	Moore et al.		
AU1	6,350,679	2/2002	McDaniel et al.		
AV1	6,376,284	4/2002	Gonzalez et al.		
AW1	6,388,324	5/14/2002	Kozicki et al.		
AX1	6,391,688	5/2002	Gonzalez et al.		
AY1	6,414,376	7/2002	Thakur et al.		
AZ1	6,418,049	7/9/2002	Kozicki et al.		
AA2	6,423,628	7/2002	Li et al.		
AB2	6,469,384	10/2002	Kozicki		

FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No. ¹	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	
		Country Code ² -Number ³ -Kind Code ⁴ (if known)					
BA	JP 56126916 A			10/19981	Akira et al.		
BB	WO 02/21542			03/14/2002	Kozicki et al.		
BC	WO 00/48196			08/17/2000	Kozicki et al.		
BD	WO 97/48032			12/18/1997	Kozicki et al.		
BE	WO 99/28914			06/10/1999	Kozicki et al.		

Examiner Signature	<i>William D. Coleman</i>	Date Considered	3/26/04
--------------------	---------------------------	-----------------	---------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 909. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² See attached Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the application number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 18 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.



PTO/GB/088 (10-01)

Approved for use through 10/31/2002.OMB 0851-0031

U. S. Patent and Trademark Office: U. S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/853,233
		Filing Date	May 11, 2001
		First Named Inventor	Steven T. Harshfield
		Group Art Unit	2823
		Examiner Name	William D. Coleman
		Attorney Docket Number	M4065.0743/P473
Sheet	3	of	10

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	CA	Abdel-Ali, A.; Elshafie, A.; Elhawary, M.M., DC electric-field effect in bulk and thin-film Ge ₅ As ₃₈ Te ₅₇ chalcogenide glass, Vacuum 59 (2000) 845-853.	
	CB	Adler, D.; Moss, S.C., Amorphous memories and bistable switches, J. Vac. Sci. Technol. 9 (1972) 1182-1189.	
	CC	Adler, D.; Henisch, H.K.; Mott, S.N., The mechanism of threshold switching in amorphous alloys, Rev. Mod. Phys. 50 (1978) 209-220.	
	CD	Affi, M.A.; Labib, H.H.; El-Fazary, M.H.; Fadel, M., Electrical and thermal properties of chalcogenide glass system Se ₇₅ Ge ₂₅ -xSb _x , Appl. Phys. A 55 (1992) 167-169.	
	CE	Affi, M.A.; Labib, H.H.; Fouad, S.S.; El-Shazly, A.A., Electrical & thermal conductivity of the amorphous semiconductor GexSe _{1-x} , Egypt. J. Phys. 17 (1986) 335-342.	
	CF	Alekperova, Sh.M.; Gadzhieva, G.S., Current-Voltage characteristics of Ag ₂ Se single crystal near the phase transition, Inorganic Materials 23 (1987) 137-139.	
	CG	Aleksiejunas, A.; Cesnys, A., Switching phenomenon and memory effect in thin-film heterojunction of polycrystalline selenium-silver selenide, Phys. Stat. Sol. (a) 19 (1973) K169-K171.	
	CH	Angell, C.A., Mobile ions in amorphous solids, Annu. Rev. Phys. Chem. 43 (1992) 693-717.	
	CI	Aniya, M., Average electronegativity, medium-range order, and ionic conductivity in superionic glasses, Solid state Ionics 136-137 (2000) 1085-1089.	
	CJ	Asahara, Y.; Izumitani, T., Voltage controlled switching in Cu-As-Se compositions, J. Non-Cryst. Solids 11 (1972) 97-104.	
	CK	Asokan, S.; Prasad, M.V.N.; Parthasarathy, G.; Gopal, E.S.R., Mechanical and chemical thresholds in IV-VI chalcogenide glasses, Phys. Rev. Lett. 62 (1989) 808-810.	
	CL	Axon Technologies Corporation, TECHNOLOGY DESCRIPTION: Programmable Metalization Cell(PMC), pp. 1-6 (Pre-May 2000).	
	CM	Baranovskii, S.D.; Cordes, H., On the conduction mechanism in ionic glasses, J. Chem. Phys. 111 (1999) 7546-7557.	
	CN	Belin, R.; Taillades, G.; Pradel, A.; Ribes, M., Ion dynamics in superionic chalcogenide glasses: complete conductivity spectra, Solid state Ionics 136-137 (2000) 1025-1029.	
	CO	Belin, R.; Zerouale, A.; Pradel, A.; Ribes, M., Ion dynamics in the argyrodite compound Ag ₇ GeSe ₅ I: non-Arrhenius behavior and complete conductivity spectra, Solid State Ionics 143 (2001) 445-455.	
	CP	Benmore, C.J.; Salmon, P.S., Structure of fast ion conducting and semiconducting glassy chalcogenide alloys, Phys. Rev. Lett. 73 (1994) 264-267.	
	CQ	Bernede, J.C., Influence du metal des electrodes sur les caracteristiques courant-tension des structures M-Ag ₂ Se-M, Thin solid films 70 (1980) L1-L4.	
	CR	Bernede, J.C., Polarized memory switching in MIS thin films, Thin Solid Films 81 (1981) 155-160.	
	CS	Bernede, J.C., Switching and silver movements in Ag ₂ Se thin films, Phys. Stat. Sol. (a) 57 (1980) K101-K104.	
	CT	Bernede, J.C.; Abachi, T., Differential negative resistance in metal/insulator/metal structures with an upper bilayer electrode, Thin solid films 131 (1985) L61-L64.	
	CU	Bernede, J.C.; Conan, A.; Fousenanti, E.; El Boucheir, B.; Goureaux, G., Polarized memory switching effects in Ag ₂ Se/Se/M thin film sandwiches, Thin solid films 97 (1982) 165-171.	
	CV	Bernede, J.C.; Khell, A.; Kettaf, M.; Conan, A., Transition from S- to N-type differential negative resistance in Al-Al ₂ O ₃ -Ag ₂ -xSe _{1-x} thin film structures, Phys. Stat. Sol. (a) 74 (1982) 217-224.	

1544235 v1; X6MJ011.DOC



PTO/SB/08B (10-01)

Approved for use through 10/31/2002.OMB 0651-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		Complete if Known			
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/853,233		
		Filing Date	May 11, 2001		
		First Named Inventor	Steven T. Harshfield		
		Group Art Unit	2823		
		Examiner Name	William D. Coleman		
Sheet	4	of	10	Attorney Docket Number	M4065.0743/P473

	CW	Bondarev, V.N.; Pikhitsa, P.V., A dendrite model of current instability in RbAg4I5, Solid State Ionics 70/71 (1994) 72-76.
	CX	Boolchand, P., The maximum in glass transition temperature (Tg) near x=1/3 in GexSe1-x Glasses, Asian Journal of Physics (2000) 9, 709-72.
	CY	Boolchand, P.; Bresser, W.J., Mobile silver ions and glass formation in solid electrolytes, Nature 410 (2001) 1070-1073.
	CZ	Boolchand, P.; Georgiev, D.G.; Goodman, B., Discovery of the Intermediate Phase in Chalcogenide Glasses, J. Optoelectronics and Advanced Materials, 3 (2001), 703
	CA1	Boolchand, P.; Selvanathan, D.; Wang, Y.; Georgiev, D.G.; Bresser, W.J., Onset of rigidity in steps in chalcogenide glasses, Properties and Applications of Amorphous Materials, M.F. Thorpe and Tichy, L. (eds.) Kluwer Academic Publishers, the Netherlands, 2001, pp. 97-132.
	CB1	Boolchand, P.; Erzweiler, R.N.; Tenhover, M., Structural ordering of evaporated amorphous chalcogenide alloy films: role of thermal annealing, Diffusion and Defect Data Vol. 53-54 (1987) 415-420.
	CC1	Boolchand, P.; Grothaus, J.; Bresser, W.J.; Suranyi, P., Structural origin of broken chemical order in a GeSe2 glass, Phys. Rev. B 25 (1982) 2975-2978.
	CD1	Boolchand, P.; Grothaus, J.; Phillips, J.C., Broken chemical order and phase separation in GexSe1-x glasses, Solid state comm. 45 (1983) 183-185.
	CE1	Boolchand, P.; Bresser, W.J., Compositional trends in glass transition temperature (Tg), network connectivity and nanoscale chemical phase separation in chalcogenides, Dept. of ECECS, Univ. Cincinnati (October 28, 1999) 45221-0030.
	CF1	Boolchand, P.; Grothaus, J., Molecular Structure of Melt-Quenched GeSe2 and GeS2 glasses compared, Proc. Int. Conf. Phys. Semicond. (Eds. Chadi and Harrison) 17 th (1985) 833-36.
	CG1	Bresser, W.; Boolchand, P.; Suranyi, P., Rigidity percolation and molecular clustering in network glasses, Phys. Rev. Lett. 58 (1986) 2493-2496.
	CH1	Bresser, W.J.; Boolchand, P.; Suranyi, P.; de Neufville, J.P., Intrinsically broken chalcogen chemical order in stoichiometric glasses, Journal de Physique 42 (1981) C4-193-C4-196.
	CI1	Bresser, W.J.; Boolchand, P.; Suranyi, P.; Hernandez, J.G., Molecular phase separation and cluster size in GeSe2 glass, Hyperfine Interactions 27 (1986) 389-392.
	CJ1	Cahan, D.; Gilet, J.-M.; Schmitz, C.; Chernyak, L.; Gartsman, K.; Jakubowicz, A., Room-Temperature, electric field induced creation of stable devices in CuInSe2 Crystals, Science 258 (1992) 271-274.
	CK1	Chatterjee, R.; Asokan, S.; Titus, S.S.K., Current-controlled negative-resistance behavior and memory switching in bulk As-Te-Se glasses, J. Phys. D: Appl. Phys. 27 (1994) 2624-2627.
	CL1	Chen, C.H.; Tai, K.L., Whisker growth induced by Ag photodoping in glassy GexSe1-x films, Appl. Phys. Lett. 37 (1980) 1075-1077.
	CM1	Chen, G.; Cheng, J., Role of nitrogen in the crystallization of silicon nitride-doped chalcogenide glasses, J. Am. Ceram. Soc. 82 (1999) 2934-2936.
	CN1	Chen, G.; Cheng, J.; Chen, W., Effect of Si3N4 on chemical durability of chalcogenide glass, J. Non-Cryst. Solids 220 (1997) 249-253.
	CO1	Cohen, M.H.; Neale, R.G.; Paskin, A., A model for an amorphous semiconductor memory device, J. Non-Cryst. Solids 8-10 (1972) 885-891.
	CP1	Croitoru, N.; Lazarescu, M.; Popescu, C.; Telnic, M.; and Vescan, L., Ohmic and non-ohmic conduction in some amorphous semiconductors, J. Non-Cryst. Solids 8-10 (1972) 781-786.
	CQ1	Dalven, R.; Gill, R., Electrical properties of beta-Ag2Te and beta-Ag2Se from 4.2 to 300K, J. Appl. Phys. 38 (1967) 753-756.
	CR1	Davis, E.A., Semiconductors without form, Search 1 (1970) 152-155.
	CS1	Deamaley, G.; Stoneham, A.M.; Morgan, D.V., Electrical phenomena in amorphous oxide films, Rep. Prog. Phys. 33 (1970) 1129-1191.
	CT1	Dejus, R.J.; Susman, S.; Volin, K.J.; Montague, D.G.; Price, D.L., Structure of Vitreous Ag-Ge-Se, J. Non-Cryst. Solids 143 (1992) 162-180.

1548235 vt; X8AUJ11.DOC



PTO/SB/068 (10-01)

Approved for use through 10/31/2002.OMB 0651-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/853,233
		Filing Date	May 11, 2001
		First Named Inventor	Steven T. Harshfield
		Group Art Unit	2823
		Examiner Name	William D. Coleman
		Attorney Docket Number	M4065.0743/P473
Sheet	5	of	10

	CU1	den Boer, W., Threshold switching in hydrogenated amorphous silicon, Appl. Phys. Lett. 40 (1982) 812-813.
	CV1	Drusedau, T.P.; Panckow, A.N.; Klabunde, F., The hydrogenated amorphous silicon/nanodisperse metal (SIMAL) system-Films of unique electronic properties, J. Non-Cryst. Solids 198-200 (1996) 829-832.
	CW1	El Bouchairi, B.; Bernede, J.C.; Burgaud, P., Properties of Ag ₂ -xSe _{1+x/n} -Si diodes, Thin Solid Films 110 (1983) 107-113.
	CX1	El Gharras, Z.; Bourahla, A.; Vautier, C., Role of photoinduced defects in amorphous Ge _x Se _{1-x} photoconductivity, J. Non-Cryst. Solids 155 (1993) 171-179.
	CY1	El Ghrandi, R.; Calas, J.; Galibert, G.; Averous, M., Silver photodissolution in amorphous chalcogenide thin films, Thin Solid Films 218 (1992) 259-273.
	CZ1	El Ghrandi, R.; Calas, J.; Galibert, G., Ag dissolution kinetics in amorphous GeSe _{5.5} thin films from "in-situ" resistance measurements vs time, Phys. Stat. Sol. (a) 123 (1991) 451-460.
	CA2	El-kady, Y.L., The threshold switching in semiconducting glass Ge ₂₁ Se ₁₇ Te ₆₂ , Indian J. Phys. 70A (1996) 507-516.
	CB2	Elliott, S.R., A unified mechanism for metal photodissolution in amorphous chalcogenide materials, J. Non-Cryst. Solids 130 (1991) 85-97.
	CC2	Elliott, S.R., Photodissolution of metals in chalcogenide glasses: A unified mechanism, J. Non-Cryst. Solids 137-138 (1991) 1031-1034.
	CD2	Elsamanoudy, M.M.; Hegab, N.A.; Fadel, M., Conduction mechanism in the pre-switching state of thin films containing Te As Ge Si, Vacuum 46 (1995) 701-707.
	CE2	El-Zahed, H.; El-Korashy, A., Influence of composition on the electrical and optical properties of Ge ₂₀ Bi _x Se _{80-x} films, Thin Solid Films 376 (2000) 238-240.
	CF2	Fadel, M., Switching phenomenon in evaporated Se _x Ge _{1-x} As thin films of amorphous chalcogenide glass, Vacuum 44 (1993) 851-855.
	CG2	Fadel, M.; El-Shair, H.T., Electrical, thermal and optical properties of Se ₇₅ Ge ₇ Sb ₁₈ , Vacuum 43 (1992) 253-257.
	CH2	Feng, X.; Bresser, W.J.; Boolchand, P., Direct evidence for stiffness threshold in Chalcogenide glasses, Phys. Rev. Lett. 78 (1997) 4422-4425.
	CI2	Feng, X.; Bresser, W.J.; Zhang, M.; Goodman, B.; Boolchand, P., Role of network connectivity on the elastic, plastic and thermal behavior of covalent glasses, J. Non-Cryst. Solids 222 (1997) 137-143.
	CJ2	Fischer-Colbrie, A.; Blenestock, A.; Fuoss, P.H.; Marcus, M.A., Structure and bonding in photodiffused amorphous Ag-GeSe ₂ thin films, Phys. Rev. B 38 (1988) 12388-12403.
	CK2	Fleury, G.; Hamou, A.; Viger, C.; Vautier, C., Conductivity and crystallization of amorphous selenium, Phys. Stat. Sol. (a) 64 (1981) 311-316.
	CL2	Fritzsche, H., Optical and electrical energy gaps in amorphous semiconductors, J. Non-Cryst. Solids 6 (1971) 49-71.
	CM2	Fritzsche, H., Electronic phenomena in amorphous semiconductors, Annual Review of Materials Science 2 (1972) 697-744.
	CN2	Gates, B.; Wu, Y.; Yin, Y.; Yang, P.; Xia, Y., Single-crystalline nanowires of Ag ₂ Se can be synthesized by templating against nanowires of trigonal Se, J. Am. Chem. Soc. (2001) currently ASAP.
	CO2	Gosain, D.P.; Nakamura, M.; Shimizu, T.; Suzuki, M.; Okano, S., Nonvolatile memory based on reversible phase transition phenomena in telluride glasses, Jap. J. Appl. Phys. 28 (1989) 1013-1018.
	CP2	Guin, J.-P.; Rouxel, T.; Keryvin, V.; Sangleboeuf, J.-C.; Serre, I.; Lucas, J., Indentation creep of Ge-Se chalcogenide glasses below T _g : elastic recovery and non-Newtonian flow, J. Non-Cryst. Solids 298 (2002) 260-269.
	CQ2	Guin, J.-P.; Rouxel, T.; Sangleboeuf, J.-C.; Melscoet, I.; Lucas, J., Hardness, toughness, and scratchability of germanium-selenium chalcogenide glasses, J. Am. Ceram. Soc. 85 (2002)

1548235 v1: X8MJ01.DOC

PTO/SB/08B (10-01)

Approved for use through 10/31/2002.OMB 0651-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1448B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/853,233
		Filing Date	May 11, 2001
		First Named Inventor	Steven T. Harshfield
		Group Art Unit	2823
		Examiner Name	William D. Coleman
		Attorney Docket Number	M4065.0743/P473
Sheet	6	of	10

	1545-52	
CR2	Gupta, Y.P., On electrical switching and memory effects in amorphous chalcogenides, J. Non-Cryst. Sol. 3 (1970) 148-154.	
CS2	Haberland, D.R.; Stieglér, H., New experiments on the charge-controlled switching effect in amorphous semiconductors, J. Non-Cryst. Solids 8-10 (1972) 408-414.	
CT2	Haifz, M.M.; Ibrahim, M.M.; Dongol, M.; Hammad, F.H., Effect of composition on the structure and electrical properties of As-Se-Cu glasses, J. Appl. Phys. 54 (1983) 1950-1954.	
CU2	Hajto, J.; Rose, M.J.; Osborne, I.S.; Snell, A.J.; Le Comber, P.G.; Owen, A.E., Quantization effects in metal/a-Si:H/metal devices, Int. J. Electronics 73 (1992) 911-913.	
CV2	Hajto, J.; Hu, J.; Snell, A.J.; Turvey, K.; Rose, M., DC and AC measurements on metal/a-Si:H/metal room temperature quantized resistance devices, J. Non-Cryst. Solids 266-269 (2000) 1058-1061.	
CW2	Hajto, J.; McAuley, B.; Snell, A.J.; Owen, A.E., Theory of room temperature quantized resistance effects in metal-a-Si:H-metal thin film structures, J. Non-Cryst. Solids 198-200 (1996) 825-828.	
CX2	Hajto, J.; Owen, A.E.; Snell, A.J.; Le Comber, P.G.; Rose, M.J., Analogue memory and ballistic electron effects in metal-amorphous silicon structures, Phil. Mag. B 63 (1991) 349-369.	
CY2	Hayashi, T.; Ono, Y.; Fukaya, M.; Kan, H., Polarized memory switching in amorphous Se film, Japan. J. Appl. Phys. 13 (1974) 1163-1164.	
CZ2	Hegab, N.A.; Fadel, M.; Sedeek, K., Memory switching phenomena in thin films of chalcogenide semiconductors, Vacuum 45 (1994) 459-462.	
CA3	Heibert et al., Intralevel hybrid resist process with submicron capability, SPIE Vol. 333 SUBMICRON LITHOGRAPHY, pp. 24-29 (1982).	
CB3	Hiit, DISSERTATION: Materials characterization of Silver Chalcogenide Programmable Metallization Cells, Arizona State University, pp. Title page-114 (UMI Company, May 1999).	
CC3	Hirose et al., High Speed Memory Behavior and Reliability of an Amorphous As ₂ S ₃ Film Doped Ag, PHYS. STAT. SOL. (a) 61, pp. 87-90 (1980).	
CD3	Hirose, Y.; Hirose, H., Polarity-dependent memory switching and behavior of Ag dendrite in Ag-photodoped amorphous As ₂ S ₃ films, J. Appl. Phys. 47 (1976) 2767-2772.	
CE3	Holmquist et al., Reaction and Diffusion in Silver-Arsenic Chalcogenide Glass Systems, 62 J. AMER. CERAM. SOC., No. 3-4, pp. 183-188 (March-April 1979).	
CF3	Hong, K.S.; Speyer, R.F., Switching behavior in II-IV-V ₂ amorphous semiconductor systems, J. Non-Cryst. Solids 116 (1990) 191-200.	
CG3	Hosokawa, S., Atomic and electronic structures of glassy Ge _x Se _{1-x} around the stiffness threshold composition, J. Optoelectronics and Advanced Materials 3 (2001) 199-214.	
CH3	Hu, J.; Snell, A.J.; Hajto, J.; Owen, A.E., Constant current forming in Cr/p+a-Si:H-V thin film devices, J. Non-Cryst. Solids 227-230 (1998) 1187-1191.	
CI3	Hu, J.; Hajto, J.; Snell, A.J.; Owen, A.E.; Rose, M.J., Capacitance anomaly near the metal-non-metal transition in Cr-hydrogenated amorphous Si-V thin-film devices, Phil. Mag. B. 74 (1996) 37-50.	
CJ3	Hu, J.; Snell, A.J.; Hajto, J.; Owen, A.E., Current-induced instability in Cr-p+a-Si:H-V thin film devices, Phil. Mag. B 80 (2000) 29-43.	
CK3	Huggett et al., Development of silver sensitized germanium selenide photoresist by reactive sputter etching in SF ₆ , 42 APPL. PHYS. LETT., No. 7, pp. 592-594 (April 1983).	
CL3	Iizima, S.; Sugi, M.; Kikuchi, M.; Tanaka, K., Electrical and thermal properties of semiconducting glasses As-Te-Ge, Solid State Comm. 8 (1970) 153-155.	
CM3	Ishikawa, R.; Kikuchi, M., Photovoltaic study on the photo-enhanced diffusion of Ag in	

1548235 v1: X8MJ01.DOC

PTO/SB/08B (10-01)

Approved for use through 10/31/2002.OMB 0651-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/853,233
		Filing Date	May 11, 2001
		First Named Inventor	Steven T. Harshfield
		Group Art Unit	2823
		Examiner Name	William D. Coleman
		Attorney Docket Number	M4065.0743/P473
Sheet	7	of	10

		amorphous films of Ge ₂ S ₃ , J. Non-Cryst. Solids 35 & 36 (1980) 1061-1066.	
Ⓜ	CN3	Iyetomi, H.; Vashishta, P.; Kalia, R.K., Incipient phase separation in Ag/Ge/Se glasses: clustering of Ag atoms, J. Non-Cryst. Solids 262 (2000) 135-142.	
	CO3	Jones, G.; Collins, R.A., Switching properties of thin selenium films under pulsed bias, Thin Solid Films 40 (1977) L15-L18.	
	CP3	Joullie, A.M.; Marucchi, J., On the DC electrical conduction of amorphous As ₂ Se ₇ before switching, Phys. Stat. Sol. (a) 13 (1972) K105-K109.	
	CQ3	Joullie, A.M.; Marucchi, J., Electrical properties of the amorphous alloy As ₂ Se ₅ , Mat. Res. Bull. 8 (1973) 433-442.	
	CR3	Kaplan, T.; Adler, D., Electrothermal switching in amorphous semiconductors, J. Non-Cryst. Solids 8-10 (1972) 538-543.	
	CS3	Kawaguchi et al., Mechanism of photosurface deposition, 164-166 J. NON-CRYST. SOLIDS, pp. 1231-1234 (1993).	
	CT3	Kawaguchi, T.; Maruno, S.; Elliott, S.R., Optical, electrical, and structural properties of amorphous Ag-Ge-S and Ag-Ge-Se films and comparison of photoinduced and thermally induced phenomena of both systems, J. Appl. Phys. 79 (1996) 9098-9104.	
	CU3	Kawaguchi, T.; Masui, K., Analysis of change in optical transmission spectra resulting from Ag photodoping in chalcogenide film, Jpn. J. Appl. Phys. 26 (1987) 15-21.	
	CV3	Kawasaki, M.; Kawamura, J.; Nakamura, Y.; Aniya, M., Ionic conductivity of Ag _x (GeSe ₃) _{1-x} (0 < x < 0.571) glasses, Solid state Ionics 123 (1999) 259-269.	
	CW3	Kluge, G.; Thomas, A.; Klabes, R.; Grotzschel, R., Silver photodiffusion in amorphous Ge _x Se _{100-x} , J. Non-Cryst. Solids 124 (1990) 186-193.	
	CX3	Kolobov, A.V., On the origin of p-type conductivity in amorphous chalcogenides, J. Non-Cryst. Solids 198-200 (1996) 728-731.	
	CY3	Kolobov, A.V., Lateral diffusion of silver in vitreous chalcogenide films, J. Non-Cryst. Solids 137-138 (1991) 1027-1030.	
	CZ3	Korkinova, Ts.N.; Andreichin, R.E., Chalcogenide glass polarization and the type of contacts, J. Non-Cryst. Solids 194 (1996) 256-259.	
	CA4	Kotkata, M.F.; Alf, M.A.; Labib, H.H.; Hegab, N.A.; Abdel-Aziz, M.M., Memory switching in amorphous GeSeTe chalcogenide semiconductor films, Thin Solid Films 240 (1994) 143-146.	
	CB4	Lakshminarayan, K.N.; Srivastava, K.K.; Panwar, O.S.; Dumar, A., Amorphous semiconductor devices: memory and switching mechanism, J. Instn Electronics & Telecom. Engrs 27 (1981) 16-19.	
	CC4	Lal, M.; Goyal, N., Chemical bond approach to study the memory and threshold switching chalcogenide glasses, Indian Journal of pure & appl. phys. 29 (1991) 303-304.	
	CD4	Leimer, F.; Stotzel, H.; Kottwitz, A., Isothermal electrical polarisation of amorphous GeSe films with blocking Al contacts influenced by Poole-Frenkel conduction, Phys. Stat. Sol. (a) 29 (1975) K129-K132.	
	CE4	Leung, W.; Cheung, N.; Neureuther, A.R., Photoinduced diffusion of Ag in Ge _x Se _{1-x} glass, Appl. Phys. Lett. 46 (1985) 543-545.	
	CF4	Matsushita, T.; Yamagami, T.; Okuda, M., Polarized memory effect observed on Se-SnO ₂ system, Jap. J. Appl. Phys. 11 (1972) 1657-1662.	
	CG4	Matsushita, T.; Yamagami, T.; Okuda, M., Polarized memory effect observed on amorphous selenium thin films, Jpn. J. Appl. Phys. 11 (1972) 606.	
	CH4	Mazurier, F.; Levy, M.; Souquet, J.L., Reversible and irreversible electrical switching in TeO ₂ -V ₂ O ₅ based glasses, Journal de Physique:IV 2 (1992) C2-185 - C2-188.	
	CI4	McHardy et al., The dissolution of metals in amorphous chalcogenides and the effects of electron and ultraviolet radiation, 20 J. Phys. C.: SOLID STATE PHYS., pp. 4055-4075 (1987).	
	CJ4	Messoussi, R.; Bernede, J.C.; Benhida, S.; Abachi, T.; Latef, A., Electrical characterization of M/Se structures (M=Ni, Bi), Mat. Chem. And Phys. 28 (1991) 253-258.	
Ⓜ	CK4	Milkova, M.; Boolchand, P., Microscopic origin of the glass forming tendency in chalcogenides	

1548235 v1; X8RAJ011.DOC

PTO/SB/08B (10-01)

Approved for use through 10/31/2002.OMB 0851-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/853,233
		Filing Date	May 11, 2001
		First Named Inventor	Steven T. Harshfield
		Group Art Unit	2823
		Examiner Name	William D. Coleman
		Attorney Docket Number	M4065.0743/P473
Sheet	8	of	10

		and constraint theory, J. Non-Cryst. Solids 240 (1998) 1-21.	
CL4		Mitkova, M.; Kozicki, M.N., Silver incorporation in Ge-Se glasses used in programmable metallization cell devices, J. Non-Cryst. Solids 299-302 (2002) 1023-1027.	
CM4		Mitkova, M.; Wang, Y.; Boodchand, P., Dual chemical role of Ag as an additive in chalcogenide glasses, Phys. Rev. Lett. 83 (1999) 3848-3851.	
CN4		Miyatani, S.-y., Electronic and ionic conduction in $(Ag_xCu_{1-x})_2Se$, J. Phys. Soc. Japan 34 (1973) 423-432.	
CO4		Miyatani, S.-y., Electrical properties of Ag_2Se , J. Phys. Soc. Japan 13 (1958) 317.	
CP4		Miyatani, S.-y., Ionic conduction in beta- Ag_2Te and beta- Ag_2Se , Journal Phys. Soc. Japan 14 (1959) 996-1002.	
CO4		Mott, N.F., Conduction in glasses containing transition metal ions, J. Non-Cryst. Solids 1 (1968) 1-17.	
CR4		Nakayama, K.; Kitagawa, T.; Ohmura, M.; Suzuki, M., Nonvolatile memory based on phase transitions in chalcogenide thin films, Jpn. J. Appl. Phys. 32 (1993) 564-569.	
CS4		Nakayama, K.; Kojima, K.; Hayakawa, F.; Imai, Y.; Kitagawa, A.; Suzuki, M., Submicron nonvolatile memory cell based on reversible phase transition in chalcogenide glasses, Jpn. J. Appl. Phys. 39 (2000) 6157-6161.	
CT4		Nang, T.T.; Okuda, M.; Matsushita, T.; Yokota, S.; Suzuki, A., Electrical and optical parameters of $GexSe_{1-x}$ amorphous thin films, Jap. J. App. Phys. 15 (1976) 849-853.	
CU4		Narayanan, R.A.; Asokan, S.; Kumar, A., Evidence concerning the effect of topology on electrical switching in chalcogenide network glasses, Phys. Rev. B 54 (1996) 4413-4415.	
CV4		Neale, R.G.; Aseltine, J.A., The application of amorphous materials to computer memories, IEEE transactions on electron dev. Ed-20 (1973) 195-209.	
CW4		Ovshinsky S.R.; Fritzsche, H., Reversible structural transformations in amorphous semiconductors for memory and logic, Metallurgical transactions 2 (1971) 641-645.	
CX4		Ovshinsky, S.R., Reversible electrical switching phenomena in disordered structures, Phys. Rev. Lett. 21 (1968) 1450-1453.	
CY4		Owen, A.E.; LeComber, P.G.; Sarabayrouse, G.; Spear, W.E., New amorphous-silicon electrically programmable nonvolatile switching device, IEE Proc. 129 (1982) 51-54.	
CZ4		Owen, A.E.; Firth, A.P.; Ewen, P.J.S., Photo-induced structural and physico-chemical changes in amorphous chalcogenide semiconductors, Phil. Mag. B 52 (1985) 347-362.	
CA5		Owen, A.E.; LeComber, P.G.; Hajto, J.; Rose, M.J.; Snell, A.J., Switching in amorphous devices, Int. J. Electronics 73 (1992) 897-906.	
CB5		Owen et al., Metal-Chalcogenide Photoresists for High Resolution Lithography and Sub-Micron Structures, NANOSTRUCTURE PHYSICS AND FABRICATION, pp. 447-451 (M. Reed ed. 1989).	
CC5		Pearson, A.D.; Miller, C.E., Filamentary conduction in semiconducting glass diodes, App. Phys. Lett. 14 (1969) 280-282.	
CD5		Pinto, R.; Ramanathan, K.V., Electric field induced memory switching in thin films of the chalcogenide system Ge-As-Se, Appl. Phys. Lett. 19 (1971) 221-223.	
CE5		Popescu, C., The effect of local non-uniformities on thermal switching and high field behavior of structures with chalcogenide glasses, Solid-state electronics 18 (1975) 671-681.	
CF5		Popescu, C.; Croitoru, N., The contribution of the lateral thermal instability to the switching phenomenon, J. Non-Cryst. Solids 8-10 (1972) 531-537.	
CG5		Popov, A.I.; Geller, I.KH.; Shemetova, V.K., Memory and threshold switching effects in amorphous selenium, Phys. Stat. Sol. (a) 44 (1977) K71-K73.	
CH5		Prakash, S.; Asokan, S.; Ghare, D.B., Easily reversible memory switching in Ge-As-Te glasses, J. Phys. D: Appl. Phys. 29 (1996) 2004-2008.	
CI5		Rahman, S.; Sivarama Sastry, G., Electronic switching in Ge-Bi-Se-Te glasses, Mat. Sci. and Eng. B12 (1992) 219-222.	
CJ5		Ramesh, K.; Asokan, S.; Sangunni, K.S.; Gopal, E.S.R., Electrical Switching in germanium	

1546235 v1; XSMJ011.DOC






PTO/SB/08B (10-01)

Approved for use through 10/31/2002.OMB 0851-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/853,233
		Filing Date	May 11, 2001
		First Named Inventor	Steven T. Harshfield
		Group Art Unit	2823
		Examiner Name	William D. Coleman
		Attorney Docket Number	M4085.0743/P473
Sheet	9	of	10

		telluride glasses doped with Cu and Ag. Appl. Phys. A 69 (1999) 421-425.	
	CK5	Rose, M.J.; Hajto, J.; Lecomber, P.G.; Gage, S.M.; Choi, W.K.; Snell, A.J.; Owen, A.E., Amorphous silicon analogue memory devices, J. Non-Cryst. Solids 115 (1989) 168-170.	
	CL5	Rose, M.J.; Snell, A.J.; Lecomber, P.G.; Hajto, J.; Fitzgerald, A.G.; Owen, A.E., Aspects of non-volatility in a -Si:H memory devices, Mat. Res. Soc. Symp. Proc. V 258, 1992, 1075-1080.	
	CM5	Schuoocker, D.; Rieder, G., On the reliability of amorphous chalcogenide switching devices, J. Non-Cryst. Solids 29 (1978) 397-407.	
	CN5	Sharma, A.K.; Singh, B., Electrical conductivity measurements of evaporated selenium films in vacuum, Proc. Indian Natn. Sci. Acad. 46, A, (1980) 362-368.	
	CO5	Sharma, P., Structural, electrical and optical properties of silver selenide films; Ind. J. Of pure and applied phys. 35 (1997) 424-427.	
	CP5	Shimizu et al., The Photo-Erasable Memory Switching Effect of Ag Photo-Doped Chalcogenide Glasses, 46 B. CHEM SOC. JAPAN, No. 12, pp. 3662-3665 (1973).	
	CQ5	Snell, A.J.; Lecomber, P.G.; Hajto, J.; Rose, M.J.; Owen, A.E.; Osborne, I.L., Analogue memory effects in metal/a-Si:H/metal memory devices, J. Non-Cryst. Solids 137-138 (1991) 1257-1262.	
	CR5	Snell, A.J.; Hajto, J.; Rose, M.J.; Osborne, I.L.; Holmes, A.; Owen, A.E.; Gibson, R.A.G., Analogue memory effects in metal/a-Si:H/metal thin film structures, Mat. Res. Soc. Symp. Proc. V 297, 1993, 1017-1021.	
	CS5	Stevenson, A.G., Microfilaments in amorphous chalcogenide memory devices, J. Phys. D: Appl. Phys. 8 (1975) L120-L122.	
	CT5	Stevenson, A.G., The switching mechanisms in amorphous chalcogenide memory devices, J. Non-Cryst. Solids 21 (1976) 319-329.	
	CU5	Stocker, H.J., Bulk and thin film switching and memory effects in semiconducting chalcogenide glasses, App. Phys. Lett. 15 (1969) 55-57.	
	CV5	Tanaka, K., Ionic and mixed conduction in Ag photodoping process, Mod. Phys. Lett B 4 (1990) 1373-1377.	
	CW5	Tanaka, K.; Iizima, S.; Sugi, M.; Okada, Y.; Kikuchi, M., Thermal effects on switching phenomenon in chalcogenide amorphous semiconductors, Solid State Comm. 8 (1970) 387-389.	
	CX5	Thornburg, D.D., Memory switching in a Type I amorphous chalcogenide, J. Elect. Mat. 2 (1973) 3-15.	
	CY5	Thornburg, D.D., Memory switching in amorphous arsenic triselenide, J. Non-Cryst. Solids 11 (1972) 113-120.	
	CZ5	Thornburg, D.D.; White, R.M., Electric field enhanced phase separation and memory switching in amorphous arsenic triselenide, Journal(?) (1972) 4609-4612.	
	CA6	Tichy, L.; Ticha, H., Remark on the glass-forming ability in GexSe1-x and AsxSe1-x systems, J. Non-Cryst. Solids 261 (2000) 277-281.	
	CB6	Titus, S.S.K.; Chatterjee, R.; Asokan, S., Electrical switching and short-range order in As-Te glasses, Phys. Rev. B 48 (1993) 14650-14652.	
	CC6	Tranchant, S.; Peytavin, S.; Ribes, M.; Flank, A.M.; Dexpert, H.; Lagarde, J.P., Silver chalcogenide glasses Ag-Ge-Se: Ionic conduction and exafs structural investigation, Transport-structure relations in fast ion and mixed conductors Proceedings of the 6th Riso International symposium, 9-13 September 1985.	
	CD6	Tregouet, Y.; Bernede, J.C., Silver movements in Ag2Te thin films: switching and memory effects, Thin Solid Films 57 (1979) 49-54.	
	CE6	Uemura, O.; Kameda, Y.; Kokai, S.; Satow, T., Thermally induced crystallization of amorphous Ge0.4Se0.6, J. Non-Cryst. Solids 117-118 (1990) 219-221.	
	CF5	Uttech, R.; Stevenson, H.; Sie, C.H.; Griener, J.D.; Raghavan, K.S., Electric field induced filament formation in As-Te-Ge glass, J. Non-Cryst. Solids 2 (1970) 368-370.	
	CG5	Viger, C.; Lefrancois, G.; Fleury, G., Anomalous behaviour of amorphous selenium films, J.	

1548235 v1; XBPJ011.DOC

PTO/SB/088 (10-01)

Approved for use through 10/31/2002 OMB 0551-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/853,233
		Filing Date	May 11, 2001
		First Named Inventor	Steven T. Harshfield
		Group Art Unit	2823
		Examiner Name	William D. Coleman
		Attorney Docket Number	M4065.0743/P473
Sheet	10	of	10

	Non-Cryst. Solids 33 (1976) 267-272.	
	CH6 Vodenicharov, C.; Parvanov, S.; Petkov, P., Electrode-limited currents in the thin-film M-GeSe-M system, Mat. Chem. And Phys. 21 (1989) 447-454.	
	CI6 Wang, S.-J.; Misium, G.R.; Camp, J.C.; Chen, K.-L.; Tigelaar, H.L., High-performance Metal/silicide antifuse, IEEE electron dev. Lett. 13 (1992) 471-472.	
	CJ6 Welrauch, D.F., Threshold switching and thermal filaments in amorphous semiconductors, App. Phys. Lett. 16 (1970) 72-73.	
	CK6 West, W.C.; Sieradzki, K.; Kardynal, B.; Kozicki, M.N., Equivalent circuit modeling of the Ag/As _{0.24} S _{0.36} Ag _{0.40} /Ag System prepared by photodissolution of Ag, J. Electrochem. Soc. 145 (1998) 2971-2974	
	CL6 West, W.C., Electrically erasable non-volatile memory via electrochemical deposition of multifractal aggregates, Ph.D. Dissertation, ASU 1998	
	CM6 Zhang, M.; Mancini, S.; Bresser, W.; Boolchand, P., Variation of glass transition temperature, T _g , with average coordination number, <m>, in network glasses: evidence of a threshold behavior in the slope dT _g /d<m> at the rigidity percolation threshold (<m>=2.4), J. Non-Cryst. Solids 151 (1992) 149-154.	

Examiner Signature		Date Considered	3/26/04
--------------------	--	-----------------	---------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 608. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²Applicant is to place a check mark here if English language Translation is attached.